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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,234	09/08/2003	Youngoo Yang	0140115	4107

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EXAMINER	
ENGLUND, TERRY LEE	

ART UNIT	PAPER NUMBER
2816	

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/658,234	YANG ET AL.	
	Examiner	Art Unit	
	Terry L Englund	2816	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

The applicants are reminded of the proper language for an abstract of the disclosure.

The form and legal phraseology often used in patent claims, such as "means" should be avoided. Also, the language should avoid using phrases which can be implied, such as "is disclosed" (e.g. it is understood the abstract is disclosing, a summarized description of the invention). The present application cites the phrases "is disclosed" (line 3), "means for receiving" (line 4), and "means for actively adjusting" (line 4). Therefore, the following changes are suggested: 1) change "A control circuit" on line 3 to --A bias control circuit,--; 2) change "an amplifier is disclosed" on line 3 to --an amplifier transistor,--; 3) replace "An exemplary bias control circuit comprises means for receiving" on line 4 with --receives--; 4) replace "means for actively adjusting" on line 5 with --actively adjusts--; and 5) change "the first" to --a first-- on line 6. The above changes remove the phrasing that should be avoided; now relates the original "an amplifier" (line 3) with "the amplifier transistor" (line 9); and identifies the "first node" for the first time.

The disclosure is objected to because of the following informalities: It is believed "CDMA" on page 4, line 4 is an acronym representing --Code Division Multiple Access--. Therefore, it is suggested what "CDMA" stands for be clearly identified within the disclosure. Page 13, line 16 "336" should be --346--; and line 17 "136" should be --146-- to accurately correspond to reference designators shown within the figures. It is also suggested "Diode" on line 1 of page 14 be made plural to correspond to its following "353 and 355" description. [Although this change is not related to accuracy, the three changes to pages 13-14 occur in a

single paragraph, and therefore should all be corrected at one time.] Appropriate corrections are required.

Claim Objections

Claims 9 and 16 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. The applicants are required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Their respective independent claims 8 and 15 already recite each transistor in a manner understood as implying a bipolar transistor. Using claim 8 as an example, the amplifier transistor has a base (see line 3); the first bias transistor has a base and an emitter (see lines 4-6); the second bias transistor has an emitter and base (see lines 3-4); the third bias transistor has a collector and a base (see lines 5-6); and the bias control transistor has a base, a collector, and an emitter (see line 8). Therefore, one of ordinary skill in the art would already consider (or understand) all of the transistors recited within each independent claim 8 and 15 are bipolar transistors.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicants regard as the invention. The first two lines of each of independent claims 1, 8, and 15 are confusing with respect to the "and further including" limitation because it implies something includes additional limitations (or elements). For example, does the bias control circuit, bias

circuit, or amplifier transistor include the additional elements? If they are additional elements, what are they in addition to? It is believed the following may have been meant: --A bias circuit, coupled to an amplifier transistor, comprises a bias control circuit and further includes:...".

Claim 15 recites the limitation "said first reference voltage" in lines 13-14 with insufficient antecedent basis for this limitation in the claim. For example, was this reference voltage meant to be recited previously with respect to any of the five different transistors?

Dependent claims carry over any rejection(s) from any claim(s) upon which they depend.

Claim Rejections - 35 USC § 103

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

In so far as being understood, claims 1-7 are rejected under 35 U.S.C. 103(a) as being obvious over Finlay et al. (Finlay). [The applied reference has a common assignee (i.e. Skyworks Solutions, Inc.) with the instant application. Based upon the earlier effective U.S. filing date

(Oct 5, 2001) of the reference with respect to the filing date (Sep 8, 2003) of the present application, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).] Fig. 2 shows a bias control circuit 44; bias circuit 26-30 with first-third bias transistors 26,30,28; and amplifier transistor 32. Since the structural relationships of 26-46 of Finlay's Fig. 2 correspond to 114,118,116,110,128,124, 120,126,130,106,122, respectively of the applicants' own Fig. 1, it is not necessary to describe all the connections and nodes. The only difference is with respect to Finlay's bias control circuit 44 coupled to first node 40 versus the applicants' bias control circuit 106 coupled to first node 126. Finlay's bias control circuit 44 does not have a means for receiving a control voltage, nor a means for actively adjusting an equivalent resistance between first node 40 and a reference voltage (e.g. ground). It would have been obvious to one of ordinary skill in the art to replace resistors 44, 38, and 46 with corresponding (bipolar) transistors, each receiving a respective

control voltage to effectively function as a variable resistance within the circuit. When bias control circuit 44 is replaced by a (bipolar) transistor and its control voltage, the base of the transistor will be the means for receiving the control voltage, and the transistor itself will be the means for actively adjusting the equivalent resistance between first node 40 and the reference voltage. Therefore, claim 1 is rendered obvious. With the resistors of Finlay's circuit replaced by corresponding transistors, the quiescent current and desired output level can be adjusted to meet the requirements of the circuitry it will be associated with. Also, the transistors will take up less area than discrete resistors. When bias control circuit 44 is replaced by an NPN transistor (e.g. to correspond to the other NPN transistors within the circuit), its equivalent resistance will decrease when the control voltage increases (i.e. as the control voltage increases, the transistor's conductance increases, thus decreasing the transistor's equivalent resistance). This renders obvious claims 2 and 3. Under these circumstances (i.e. an increase in control voltage), the voltage at node 40 will decrease, causing the voltages at nodes 34 and 42 to increase. With an increase of its base voltage at node 42, amplifier transistor 32 will conduct more, thus its quiescent current will increase, and claim 4 is rendered obvious. It would have been obvious to one of ordinary skill to integrate the bias control circuit, bias circuit, and amplifier transistor into a single die, rendering obvious claim 5. The use of a single die would help minimize area, and also help ensure all the elements operate under the substantially the same conditions (e.g. temperature). Since Finlay discloses the circuit is related to RF power amplifiers (e.g. see column 1, lines 19-20), it would have been obvious to one of ordinary skill in the art to use amplifier transistor 32 as a high power CDMA transistor, thus claim 6 is rendered obvious. CDMA transistors are one well-known type of transistor used within communications systems.

As shown in Fig. 2, one of ordinary skill in the art would understand the reference voltage is ground, thus claim 7 is also rendered obvious.

No claim is allowable as presently written.

Allowable Subject Matter

However, independent claims 8 and 15 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action. There is presently no motivation to modify or combine any prior art reference(s) to ensure the bias control circuit comprises the bias control transistor, as well as at least the first-fourth resistors as recited within each of claims 8 and 15. Since claims 9-14 depend on claim 8, and claims 16-20 depend on claim 15, those claims carry over the rejection(s) of their respective independent claim and would also be allowable if their rejected independent claim is satisfactorily addressed/corrected. Also, it is noted that dependent claims 9 and 16 need to be either cancelled, or amended to clearly recite limitations that further limit those recited within their respective independent claim (e.g. see the claim objections described previously).

Prior Art

The other prior art references cited on the accompanying PTO-892 are deemed relevant to at least sections of the claimed invention. Kim et al. shows a bias control circuit for a bias circuit in Fig. 2B, wherein Q1 corresponds to an amplifier transistor; Qbias corresponds to the second bias transistor; Q4 corresponds to the third bias transistor; and Vmode corresponds to the control voltage. However, this reference lacks at least the first bias transistor with its base coupled to the based of second bias transistor Qbias. Although not used in any formal rejections described above, the references by Fowler and Shapiro et al. both show and disclose circuits with

structures having an amplifier transistor, the first-third transistors, and a resistor respectively corresponding to the amplifier transistor, first-third transistors, and bias control circuit of the present application. For example, see Fowler's Fig. 1: 132, 126/130/128, and 144; and Shapiro et al.'s Fig. 11: 1000, T3/T1/T2, and the unlabeled resistor coupled to the base of T2. The Shapiro et al. reference also shows/discloses a temperature compensation circuit 1002 comprising at least one diode coupled in series with resistor 402. Each of these references could have been modified for the same reason as described above with respect to the Finlay et al. reference. However, it is believed the assignee (i.e. Conexant Systems, Inc.) of the Fowler and Shapiro et al. references now comes under the assignee (i.e. Skyworks Solutions, Inc.) of the Finlay et al. reference, as well as the present application. The assignee change apparently occurred in 2002.

Any inquiry concerning this communication from the examiner should be directed to Terry L. Englund whose telephone number is (571) 272-1743. The examiner can normally be reached Monday-Friday from 7 AM to 3 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Callahan, can be reached on (571) 272-1740.

The new central official fax number is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-1562.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TLE
Terry L. Englund

27 October 2004

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